Exelon Generation®

Clinton Power Station
8401 Power Road
Clinton, IL 61727

U-604453

November 19, 2018

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, Illinois 60532-4352

Clinton Power Station, Unit 1
Facility Operating License NPF-62
NRC Docket No. 50-461

Subject: Clinton Power Station Regulatory Conference Information

References:

(1) Letter from P. L. Louden (NRC) to B. C. Hanson (Exelon Generation Company, LLC), "Clinton Power Station—NRC Inspection Report 05000461/2018051 and Preliminary White Finding," dated October 15, 2018 [EA-18-104]

(2) Letter from P. L. Louden (NRC) to B. C. Hanson (Exelon Generation Company, LLC), "ERRATA—Clinton Power Station—NRC Inspection Report 05000461/2018051 and Preliminary White Finding," dated November 6, 2018 [EA-18-104]

(3) Letter from B. T. Kapellas (Exelon Generation Company, LLC) to K. K. Stoedter (NRC), "Response to NRC Inspection Report and Preliminary White Finding," dated October 19, 2018

(4) Letter from K. R. Riemer (NRC) to B. C. Hanson (Exelon Generation Company, LLC), "Clinton Power Station—Regulatory Conference," dated November 15, 2018 [EA-18-104]

In accordance with the referenced letters, Exelon Generation Company, LLC (EGC) is submitting the enclosed supporting presentation materials for the Regulatory Conference to be held on November 30, 2018, at the NRC's Region III Office. As requested in References 1 and 2, this material is being submitted at least one week prior to the conference in an effort to make the conference more efficient and effective.

There are no regulatory commitments contained in this letter.

RGN03
NRR
RGN-III

If there are any questions or concerns regarding this submittal, please contact Mr. Dale Shelton, Regulatory Assurance Manager, at (217) 937-2800.

Respectfully,

Bradley T. Kapellas
Plant Manager
Clinton Power Station

Enclosure: Clinton Power Station Regulatory Conference Information

cc: NRC Document Control Desk
NRC Project Manager, NRR — Clinton Power Station
NRC Senior Resident Inspector — Clinton Power Station
Karla Stoedter — NRC
Kenneth Riemer — NRC
Charles Phillips — NRC
Illinois Emergency Management Agency — Division of Nuclear Safety

ENCLOSURE

Clinton Power Station, Unit 1

Docket No. 50-461

Facility Operating License No. NPF-62

Clinton Power Station Regulatory Conference Information

Clinton Power Station
Regulatory Conference

Division 2 Diesel Generator
Air Start Isolation Event

November 30, 2018

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Agenda

- Introduction . . . . . Brad Fewell
- Finding Cause and Corrective Actions. . . . . Brad Kapellas
- Key Differences. . . . . Gene Kelly/Johnny Weissinger
- Initial Conditions for Postulated Event, Recovery and Mitigation Actions . . . . . Johnny Weissinger/Gene Kelly
- Risk Significance. . . . . Gene Kelly
- Conclusion . . . . . Ted Stoner

Clinton Power Station Regulatory Conference

Introduction

Brad Fewell

Senior Vice President, Regulatory Affairs
and General Counsel

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Introduction

- We agree with the Finding and violation
- We recognize our failure to maintain the configuration of an important safety system
- We have taken timely, comprehensive, and broad responsive actions
- We disagree with the Finding's preliminary significance of White
  - Commission Policy and NRC guidance drive risk evaluations to be realistic and based on best available information
  - NRC risk evaluation does not reflect the as-built, as-operated plant response
- NRC's risk evaluation assumptions do not reflect how CPS would respond to DG recovery, SBO, FLEX, and ELAP by not appropriately crediting:
  - Operators' extensive knowledge, training, and experience
  - Available time to take recovery actions
  - Procedures that control the event and drive successful resolution

PRA evaluations should be realistic and based on best available information

Introduction (cont.)

- We will show that using realistic and best-available information:
  - Division 2 DG would have been restored and injection available within one hour
  - Expansive time was available to recover AC power and prevent core uncovery
  - Procedurally directed alternative power recovery actions would have been pursued in parallel
  - Objective data to support different performance shaping factor (PSF) multipliers
- We will provide information that the NRC did not previously review and new information that we have recently developed
- We had the knowledge, time, and resources to restore AC power and injection

Finding should be characterized as Green

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Finding Cause and Corrective Actions

Brad Kapellas

Plant Manager

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Station Event Response

- Root Cause
  - Contrary to Exelon fleet governance for plant status control, operator logs were utilized as the sole means to track plant configuration
- Corrective Action to Prevent Reoccurrence
  - Identify and eliminate legacy site-specific administrative procedures/guidance that allow operator logs as a sole method for plant status control
- Continuous Procedure Use
  - Cause of the event was not an operating procedure execution issue
  - Procedure directed operator component manipulation error rate is very low (estimated less than two per million manipulations)
- Corrective Actions
  - Implemented "I know because I looked" initiative station wide to improve administrative procedure knowledge and compliance
  - Reinforced accountability for equipment status control throughout operations
  - Revision to safety related operator rounds points
  - Three day station wide campaign for change

Event taken seriously and being used as burning platform to move culture to sustained levels of high Operational Excellence

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Regulatory Conference

Key Differences

Gene Kelly

Sr. Manager, Risk Management

Johnny Weissinger

Director, Operations

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Exelon and NRC Risk Results – Differences

Exelon change in CDF	NRC change in CDF
1E-8/year	3.8E-6/year

- Large difference in our results, a factor of almost 400
- The difference is not in PRA methods ... both use similar approaches from a PRA standpoint
- Key differences:
  - Actual site response in SBO conditions
  - Available time to recover power and injection
  - Operator experience and training applied to recovery actions
  - Complexity associated with power recovery actions

Risk analysis should reflect manner in which plant is operated

Key Choice Letter Disagreements

NRC Position	Exelon Position
Assumption 12	
• 1 hour available to recover AC power to Division 2 by recovering DG; ELAP declared at 1 hour and FLEX power to Division 2 would commence	• Air start valves found isolated within 29 minutes; ELAP not declared
• DG recovery complicated by SBO load shedding that removes all DC control power from DG	• Load shed recovery proceduralized and does not complicate DG recovery
• FLEX electrical lineup impacts DG components	• ELAP not declared/FLEX staging only
Assumption 13	
• Experience/training considered Low for DG recovery diagnosis	• DG air start valve position easily identified in knowledge-based or procedure-based mode
• Operators have not trained on, experienced, or been exposed to failed DG	• Operators extensively trained on DG malfunctions

Key Choice Letter Disagreements (cont.)

NRC Position	Exelon Position
Assumption 2	
• Time to TAF does not appear to credit shutdown cooling isolation	• Operators will close one shutdown cooling valve per procedure to extend time to TAF from 10.8 hours to about 24 hours
Assumptions 14, 23, 24	
• FLEX implementation success credited as Low • FLEX lineup experience/training considered Low • FLEX ergonomics considered Poor	• NRC inspections confirm that FLEX strategy meets regulatory requirements • FLEX trained in accordance with Systematic Approach to Training • FLEX tasks similar to normal EO tasks & performed in non-adverse conditions
Assumption 15	
• Div 3 to Div 2 AC power cross-tie is Complex • Time required to complete cross-tie is 5-6 hours	• Procedure is straightforward and not complex • Time-validated at 1.5 hours

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Initial Conditions for Postulated Event, Recovery and Mitigation Actions

Johnny Weissinger

Director, Operations

Gene Kelly

Sr. Manager, Risk Management

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Success Criteria

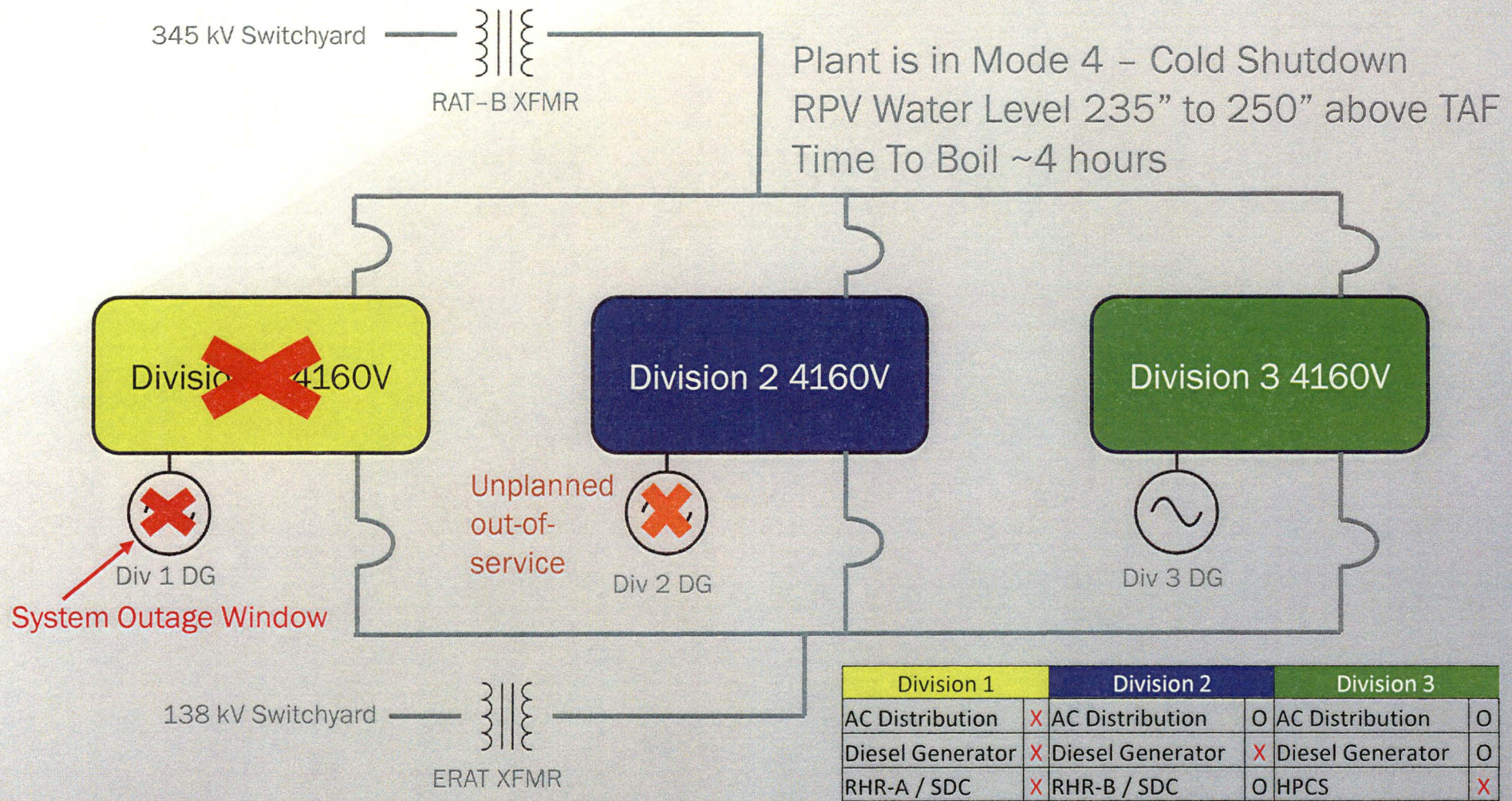
Injection Established Before RPV Water Level Reaches the Top of Active Fuel

- Division 2 DG is completely recoverable (no equipment malfunction) and operations response would not complicate recovery
  - NRC did not model or credit Division 2 DG after one hour
- One action to close a shutdown cooling valve (1E12-F008), as directed by procedure, extends the time to TAF to about 24 hours
  - Does not appear to be modeled in NRC's analysis
- DC batteries provide ability to control RPV pressure using SRVs permitting use of low or high pressure injection sources
  - Does not appear to be modeled in NRC's analysis

Exelon Perspective

- RPV injection will be restored prior to reactor water level lowering below TAF through multiple, independent, and diverse means
  - Rule-based procedural guidance to restore the DG
  - Knowledge-based identification of the DG air start valves
  - Cross-tie of the Division 3 DG to the Division 2 bus
  - Use of FLEX
- Identifying the closed air start valves, reopening them, and restarting the DG per procedure terminates the postulated event
  - Significant time available before deterioration of plant conditions
  - Operators are extremely knowledgeable and experienced with DG operation
  - All actions to identify the valves and restart DG are proceduralized
  - Air start valves are readily identifiable and accessible
  - Reopening a manual ball valve is a simple task
  - Emergency battery lighting and portable flashlights available
  - Significant resources onsite to support

Bus Alignment During Div 1 & 2 DG Unavailability



Division 1		Division 2		Division 3	
AC Distribution	X	AC Distribution	O	AC Distribution	O
Diesel Generator	X	Diesel Generator	X	Diesel Generator	O
RHR-A / SDC	X	RHR-B / SDC	O	HPCS	X
LPCS	X	RHR-C	O		
DC Batteries	O	DC Batteries	O	DC Batteries	O

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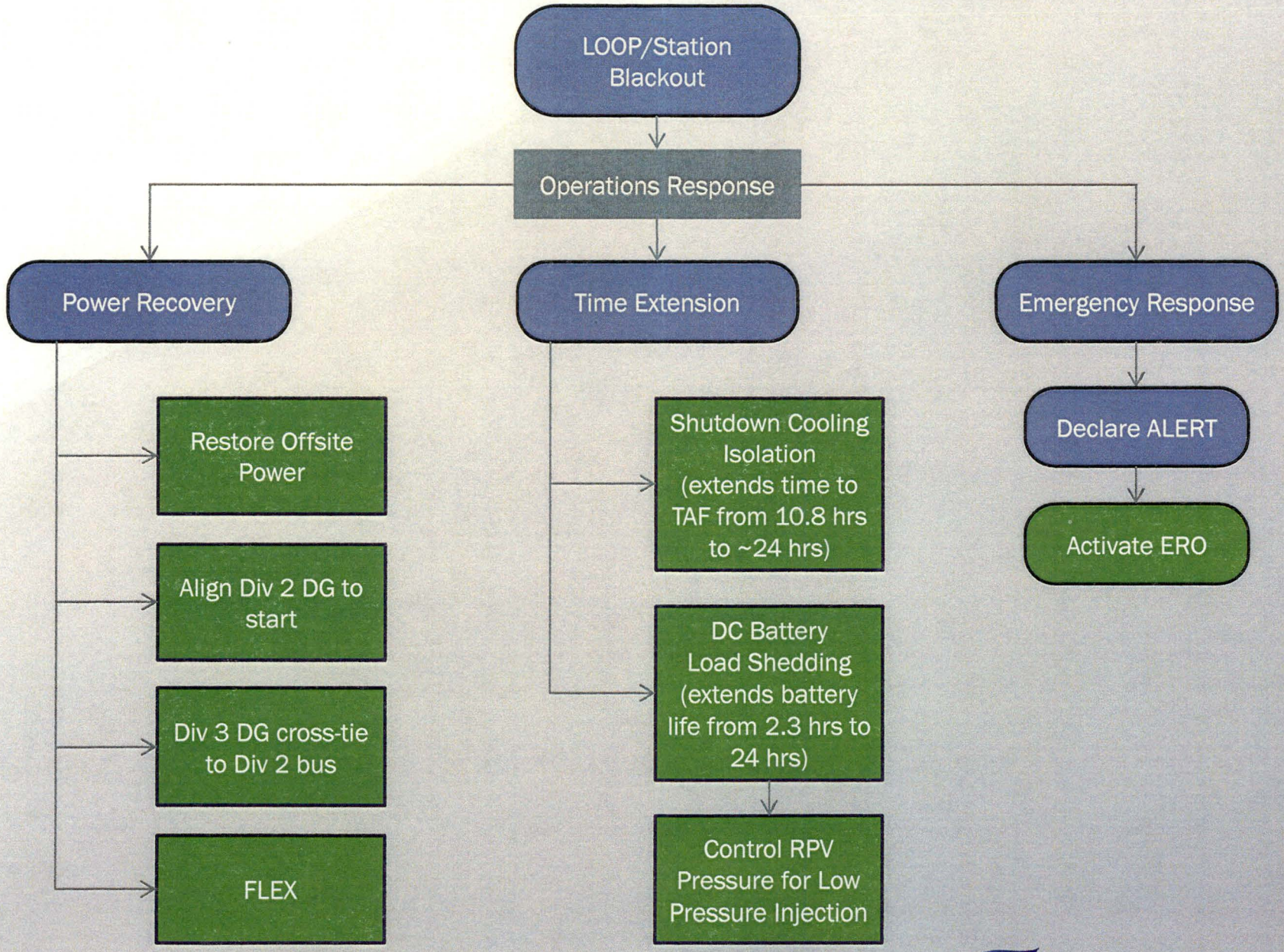
Overview of Station Response to a SBO



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Loss of AC Power Procedure 4200.01

Station Blackout (SBO) *«CM-1»*

A total loss of offsite AC power sources (including main generator), and failure of Div 1 & Div 2 DG power sources.

1.5 **Extended Loss of AC Power (ELAP)**

A total and sustained (>1 hour) loss of both offsite and onsite AC power sources as a result of a postulated Beyond Design Basis External Event (BDBEE) which is expected to exceed the 4 hour SBO coping period.

- Definitions are in accordance with CPS licensing basis

SBO is not a beyond design basis external event

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LOOP Procedure Direction for ELAP Declaration

IF Within 1 HOUR of the Station Blackout, there has not been action taken that would provide a HIGH ASSURANCE of restoration of Div 1 and/or Div 2 power within the 4 hour SBO coping period,

THEN STOP executing Station Blackout actions and immediately execute CPS 4306.01 Extended Loss of AC Power/Loss of UHS.

HIGH ASSURANCE that power will be recovered within 4 hours includes:

- Division 2 DG air start valves identified out of position
- No maintenance performed on Division 2 DG during outage
- No degraded conditions for the Division 2 DG existed

Shift Manager has High Assurance ELAP does not exist

Entry into ELAP

- Operators are exhaustively trained on the DGs and Loss of AC Power due to high risk significance
  - Five simulator scenarios, 26 exam questions, biennial training in last two years
  - Operator JPMs for DGs include resetting trips/lockouts and manually bypassing the air start system to manually start the engine with 100% pass rates administered a total of 50 times in the last two years
- ERO is trained on LOOP/FLEX
  - ERO drills include simulated loss of power and/or loss of DG
  - TSC personnel experienced in plant restoration
  - Restoration of power is high priority
- Six CPS Shift Managers were surveyed for four potential ELAP scenarios
  - All surveyed Shift Managers stated they would not declare an ELAP during scenarios where action was taken to recover power within the 4-hour SBO coping period
  - All Shift Managers stated they would not enter ELAP/FLEX procedures once the DG air start valves are identified out of position
  - All Shift Managers surveyed stated they would pre-stage FLEX equipment to improve plant risk
- 28 SROs from other stations (including non-Exelon) were given CPS procedures and scenarios that recreated the postulated scenario
  - All SROs stated that they remain in the LOOP procedure and NOT enter ELAP

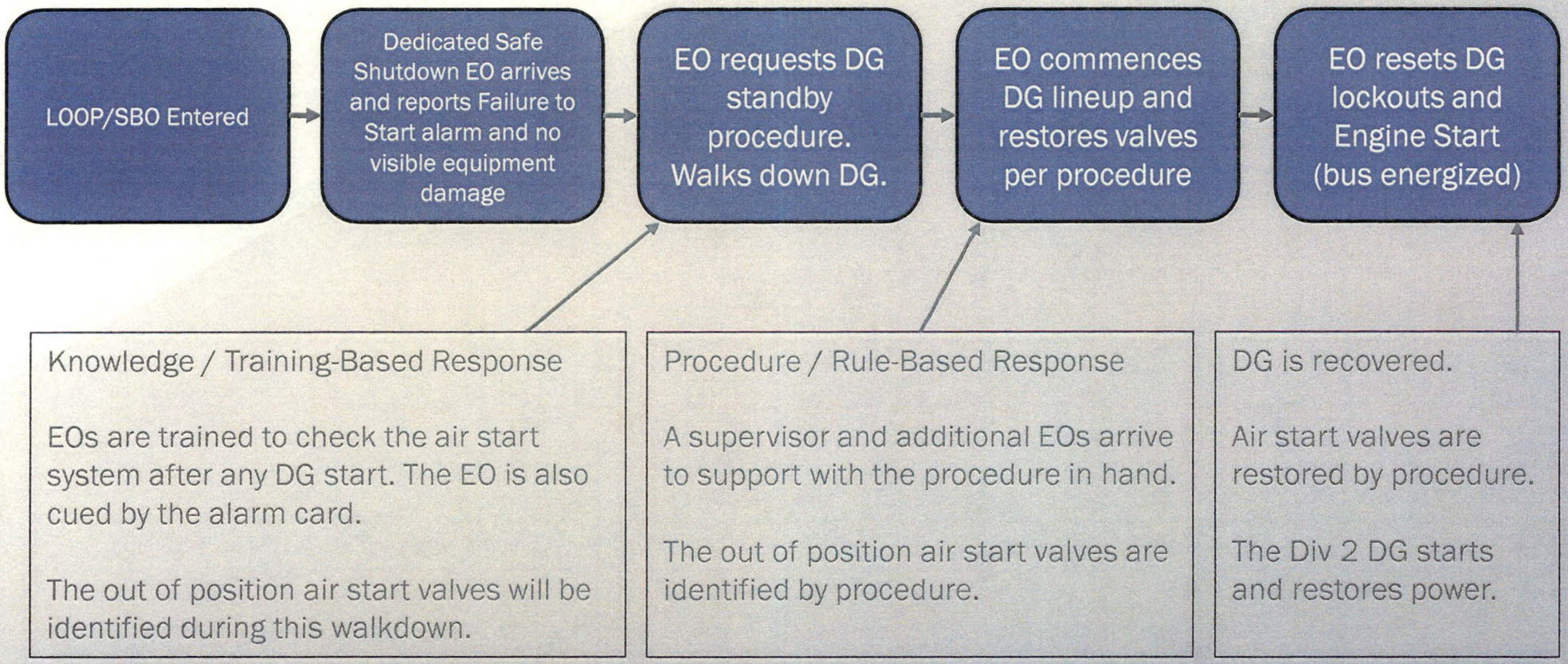
No ELAP entry conditions

Recovery Pathway #1: Division 2 DG Restoration

- Time validation for a CPS EO to walkdown and identify the out of position air start valves using only system knowledge was 11 minutes
- Time validation for a CPS EO to identify and correct the out of position air start valves per procedure was 29 minutes
  - DG full lineup completed within 40 minutes and in service within 50 minutes
- JPM performed by non-CPS EOs to identify out of position air start valves
  - All six EOs identified closed air start valves using procedure within 32 minutes
  - DG full lineup completed within 37 minutes
- Multiple operators, engineers, and technicians would respond, improving DG recovery time

Division 2 DG will be recovered in < 1 hour

Rule-Based Operator Response to Division 2 DG Failure to Start



Multiple means to identify out of position air start valves

Identification of closed air start valves and no visible damage provides Shift Manager High Assurance of Division 2 power recovery

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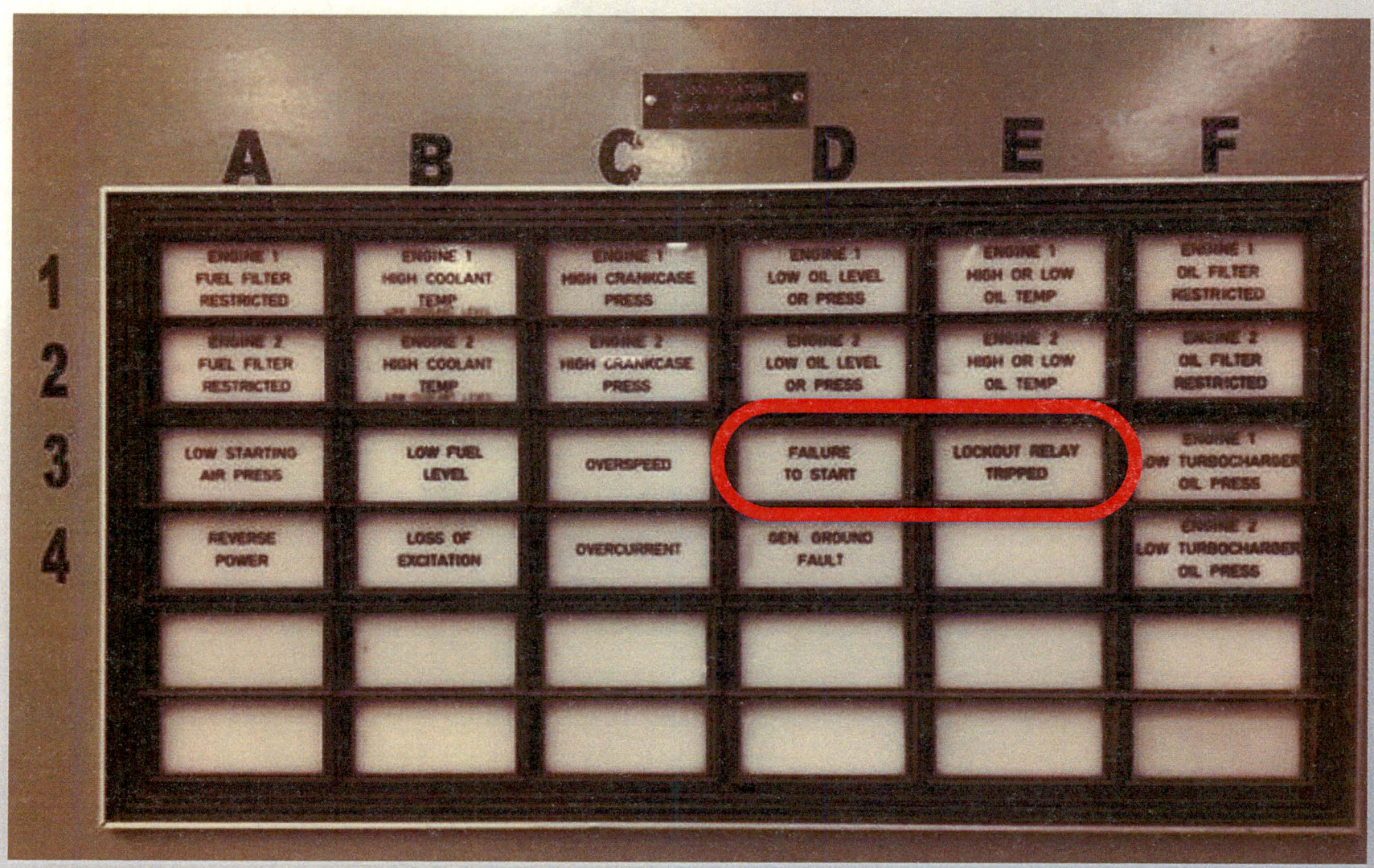
Operator Response to Division 2 DG Failure to Start (Rule-Based)



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Operator Alarm Response (Rule-Based)

FAILURE
TO START

TITLE: FAILURE TO START			5285-3D
DEVICE	NAME	SETPOINT	INDICATION
K4	Overcrank Relay	< 125 rpm and > 10 sec after start	LOCKOUT RELAY TRIPPED amber light ON

Dedicated EO requests a copy of the DG procedures from the Control Room

AUTO ACTIONS

Lockout relay trips.

OPERATOR ACTIONS

1. Verify DG 1B is ready to start per CPS 3506.01, Diesel Generator And Support Systems (DG).

2. If the 4160V Bus 1B1 is deenergized after DG 1B failure to start, refer to CPS 3501.01, High Voltage Auxiliary Power System to reenergize the bus.

3. If required, proceed to CPS 4200.01, Loss Of AC Power.

Operator Alarm Response (Rule-Based)

Opening of the air start valves is procedurally governed

2.0 **Placing DG 1B in Standby**

CPS 3506.01P002

2.2 **Starting Air System**

6. Open and lock open the following Air Starting System Air Receiver Outlet Valves:

   1) 1DG160, Air Receiver A Outlet. ☐

   2) 1DG161, Air Receiver B Outlet ☐

On Page 6 of DG operating procedure

Restoration of DC control power following load shed is procedurally governed and does not complicate DG recovery

4.2.4 **Re-Energizing 4160V Bus 1A1(1B1)[1C1] Using DG 1A(1B)[1C]**

4. (Local) For applicable Bus 1A1(1B1) re-energization:

Verify Ckt #13(14) [DG 1A(1B) control] & Ckt #32 (RHR control) on DC MCC 1A(1B) [1DC13(14)E] are re-energized if turned off by CPS 4200.01C002, DC Load Shedding During A SBO.

Load shed circuits are recovered per Loss of AC Power procedure

DG recovered completely by procedures

Operator Response to Division 2 DG Failure to Start (Knowledge-Based)

FAILURE
TO START

TITLE: FAILURE TO START			5285-3D
DEVICE	NAME	SETPOINT	INDICATION
K4	Overcrank Relay	< 125 rpm and > 10 sec after start	LOCKOUT RELAY TRIPPED amber light ON

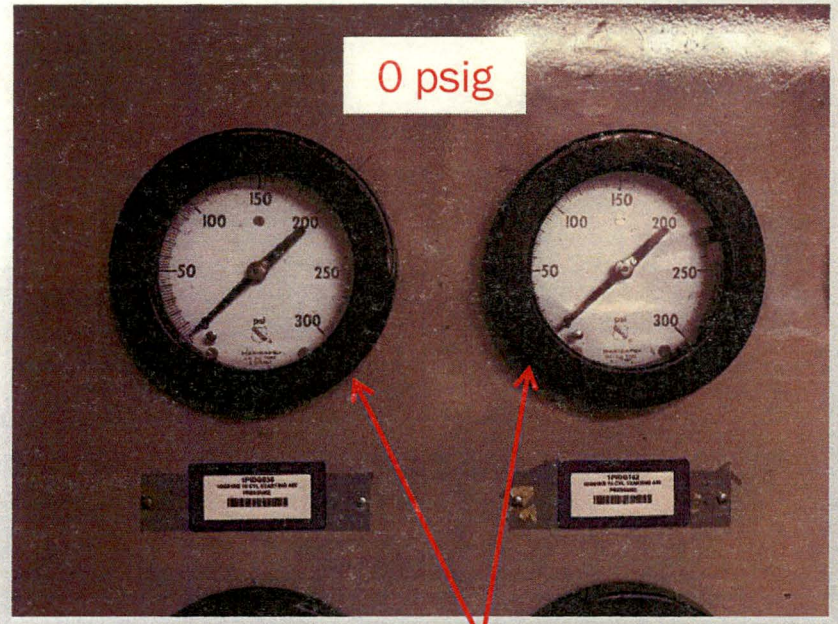
POSSIBLE CAUSE

1. Low starting air pressure
2. Lockout relay not reset
3. Overspeed trip handle not reset
4. Safety shutdown circuits not reset
5. Engine maintenance switch in LOCKOUT position

Starting air receiver pressure is 225-250 psig and did not lower as expected following DG start signal

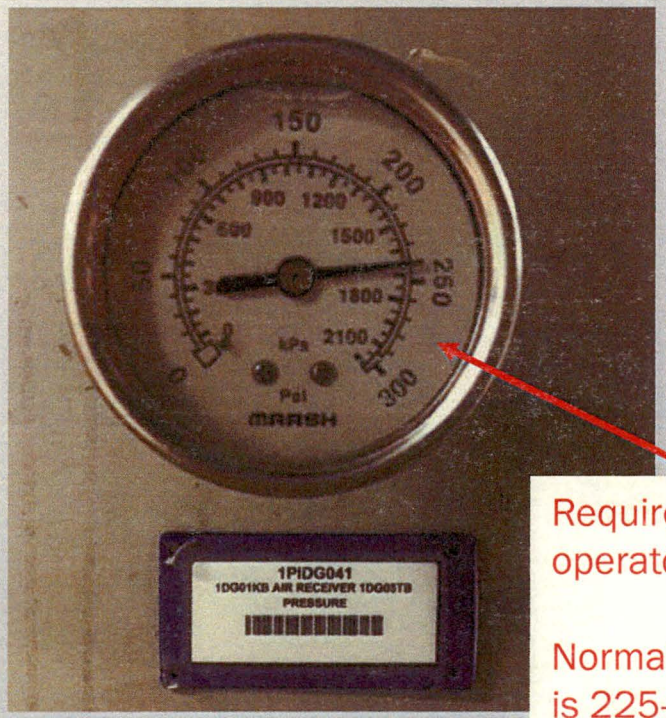
Operator Validates DG Starting Air Parameters

Division 2 DG Local Air Start Pressure
Located on gauge board, as found during the event



Not on operator rounds prior to event

Division 2 DG Air Receiver Pressure
Tech Spec LCO 3.8.3



Required to log on operator rounds

Normal pressure is 225-250 psig

EO identifies closed air start valves based on alarms and local indications

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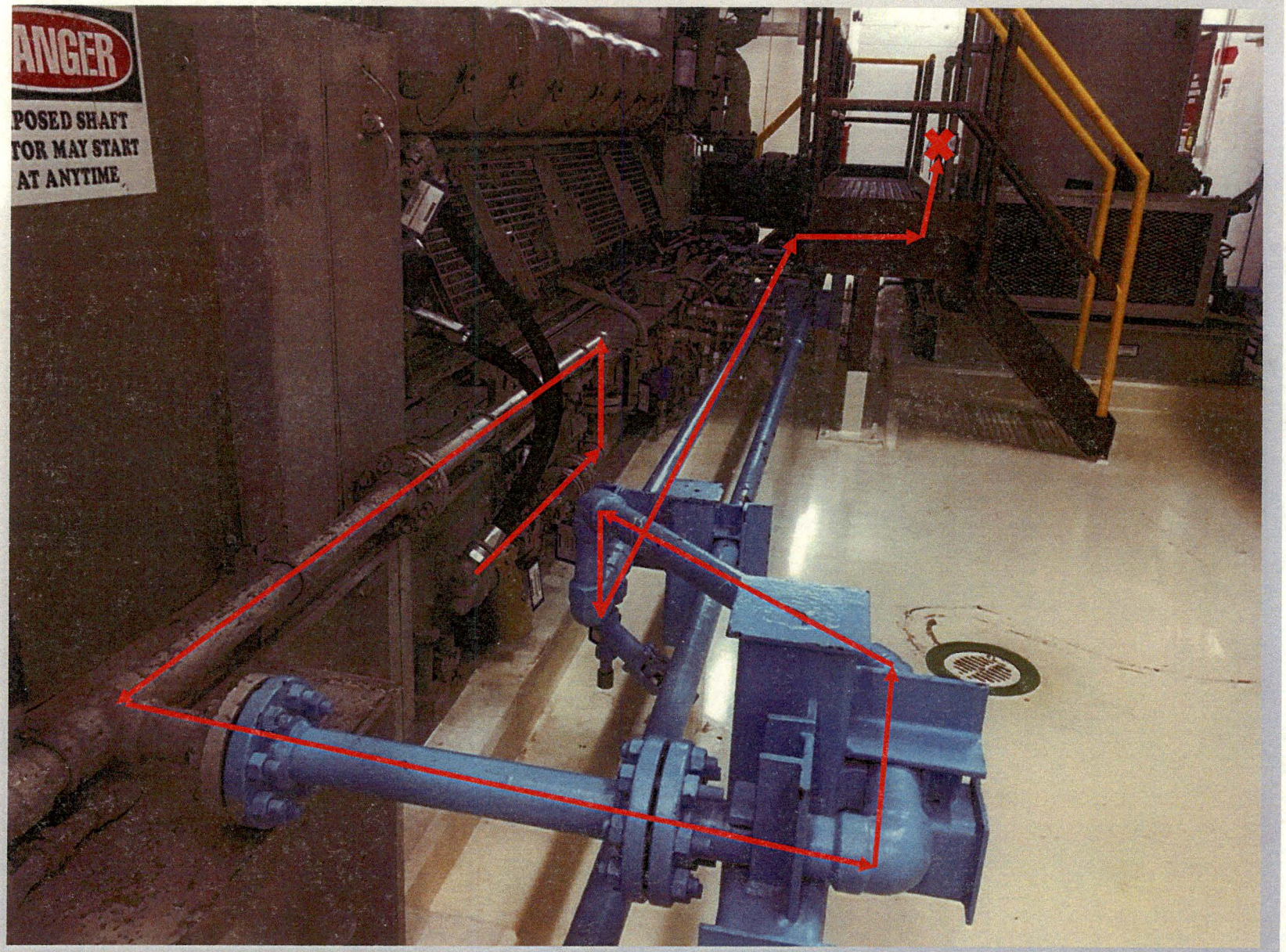
Operator Response to Division 2 DG Failure to Start

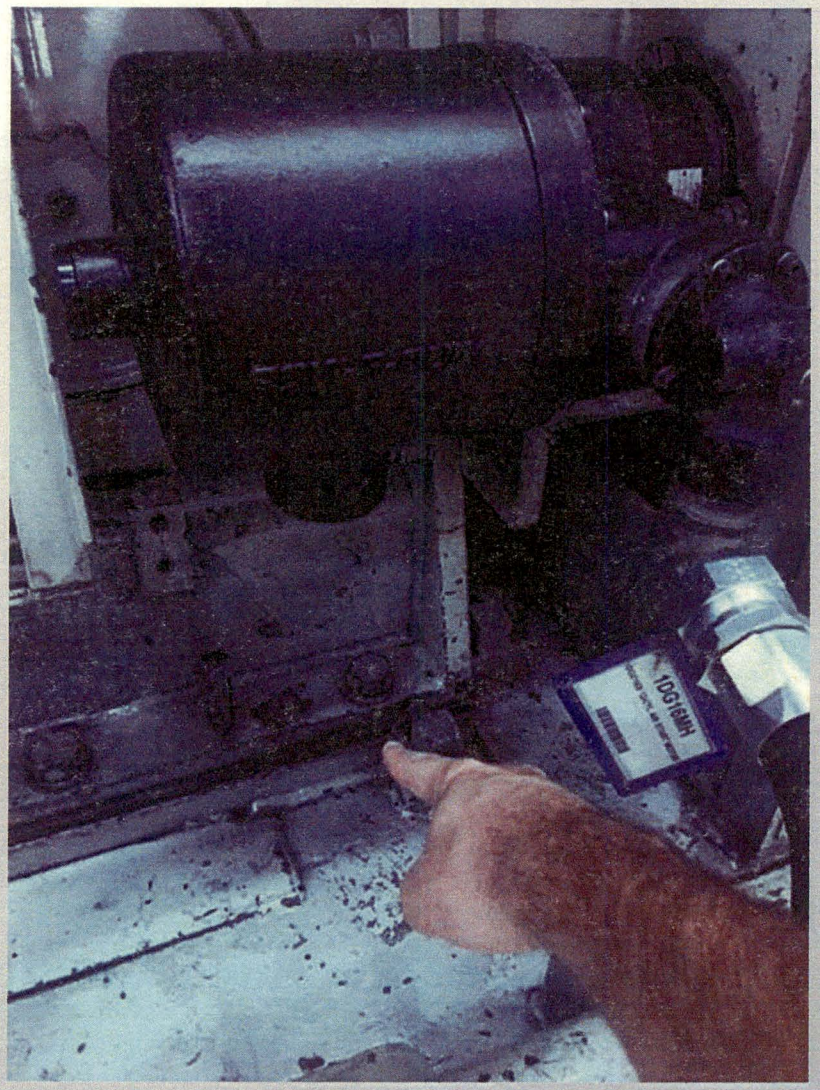
This flow path was most recently trained in 2017

Air start path can be easily traced back to the receivers

EO JPM to start the DG by overriding the air start system solenoids/lineup; 100% pass rate across 27 Operators in 2017



Operator Validates Air Start System Did Not Actuate Through Equipment Checks



If the DG received starting air, an oil spray/mist would be visible below the exhaust of the six air start motors

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Operator Response to Division 2 DG Failure to Start

Walking down the air start system is trained and performed with the monthly DG runs

CPS 9080.02

8.2 **DG 1B Operability** (cont'd)

8.2.3 Start Diesel Generator 1B (cont'd)

7) Start DG 1B with DG 1B control switch.

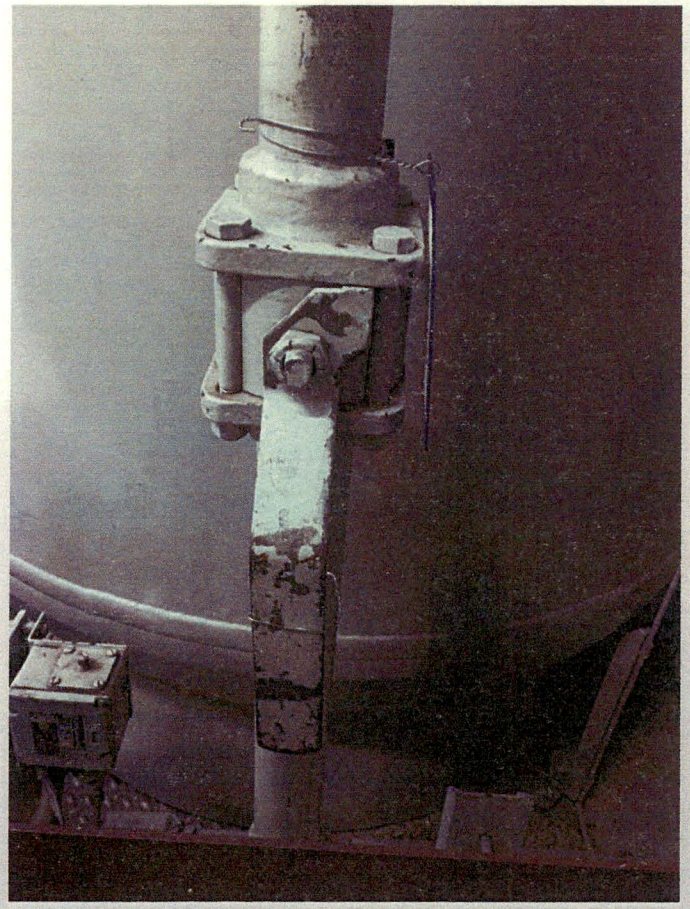
8.2.4 Verify the following:

6. (Local) Verify that an oil mist was exhausted from **OR** oil residue exists in the exhaust port of all DG air start motors:

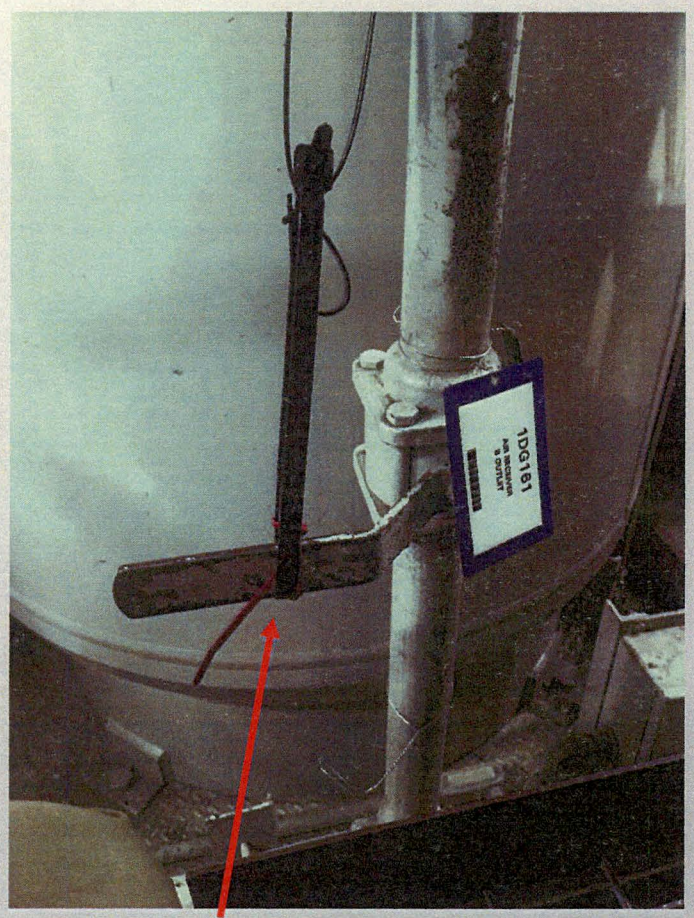
☞ Can be indicated by oil on the engine next to the air start exhaust port.

EOs trained to check air start system response after DG start

Operator Identifies Out Of Position Air Start Valves



Division 2 DG air start valve in the normal "Locked Open" position



Left over tie wraps from clearance order tags as found on 5/17/18

"Tags Plus" straps left on air start valves

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Operator Response to Division 2 DG Failure to Start

Video

DG Restoration Summary

- Identification of the out of position air start valves will occur in either knowledge or rule-based space
- Air start valves are time validated to be identified by knowledge in 11 minutes and procedure in 29 minutes
- DG recovery is simple task (open air start valves) using regularly executed DG lineup procedure
- Identification of closed air start valves and no visible damage provides Shift Manager High Assurance of Division 2 power recovery
  - An ELAP will not be declared
- OCC/ERO technical support and large number of resources

We had knowledge, time, and resources to restore Division 2 DG

Impact of Actual Response: Div 2 DG Recovery

Exelon's DG HEP	NRC's DG HEP
0.005 (99.5% success)	0.2 (80% success)

- Realistic modeling of Division 2 DG recovery, by itself, leads to GREEN significance
  - NRC's sensitivity case #3 (using Exelon's HEP) shows Green

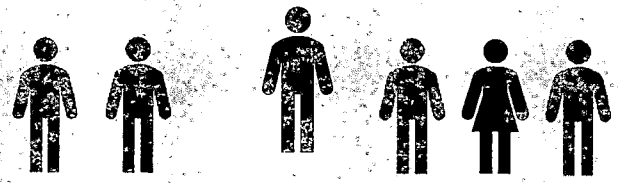
PSF	NRC Diagnosis Setting	Exelon Position	SPAR-H HEP Reduction Factor	Impact on Finding
Available Time (required time <1 hr)	Nominal 1 hr	Expansive only need 2 hrs, but 24 hrs available	~50	GREEN
Experience/Training	Low	Nominal	~10	GREEN

Considerable available time, and operator experience and training assure high success

Minimum Shift Staffing

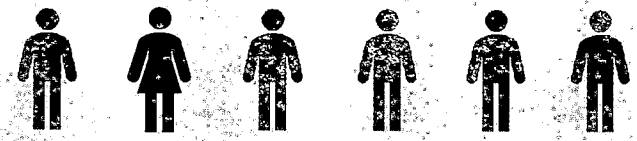
Control Room Team

Shift Manager
(SRO)



2 Senior Reactor Operators

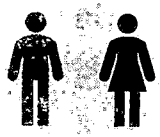
3 Reactor
Operators



6 Equipment Operators

Dedicated On Duty
Security Force Members

1 IM/EM
ERO

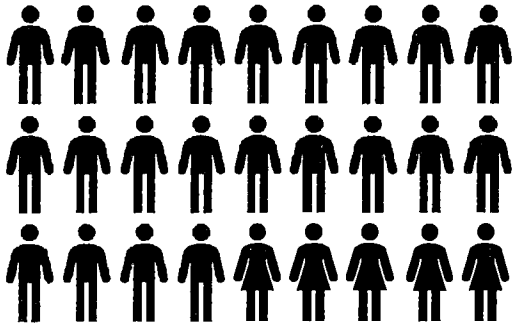


2 RP Technicians

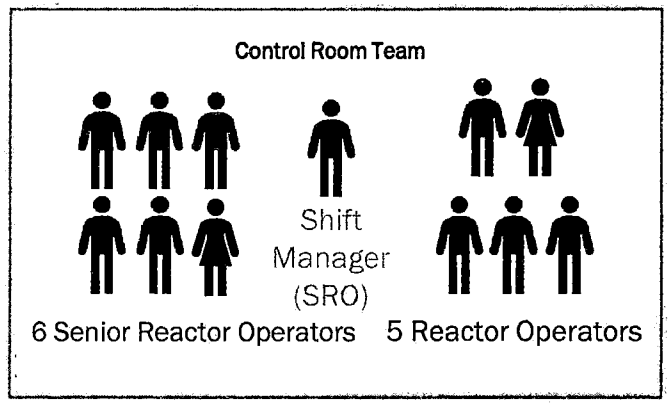
Chemistry
Technician

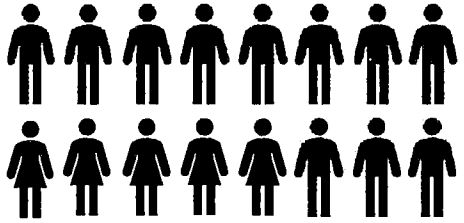
Outage Response Staffing

- 137 - Minimum craft staffing on any shift during the affected window of C1R18

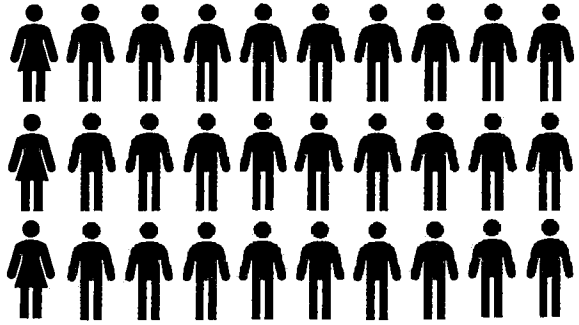


27 Equipment Operators

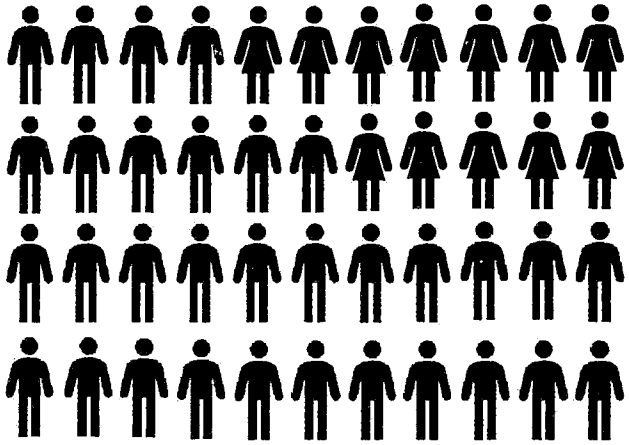




16 Electricians



30 Mechanics



44 Instrument Maintenance Technicians

4 Chemistry Technicians

11 Radiation Protection Technicians

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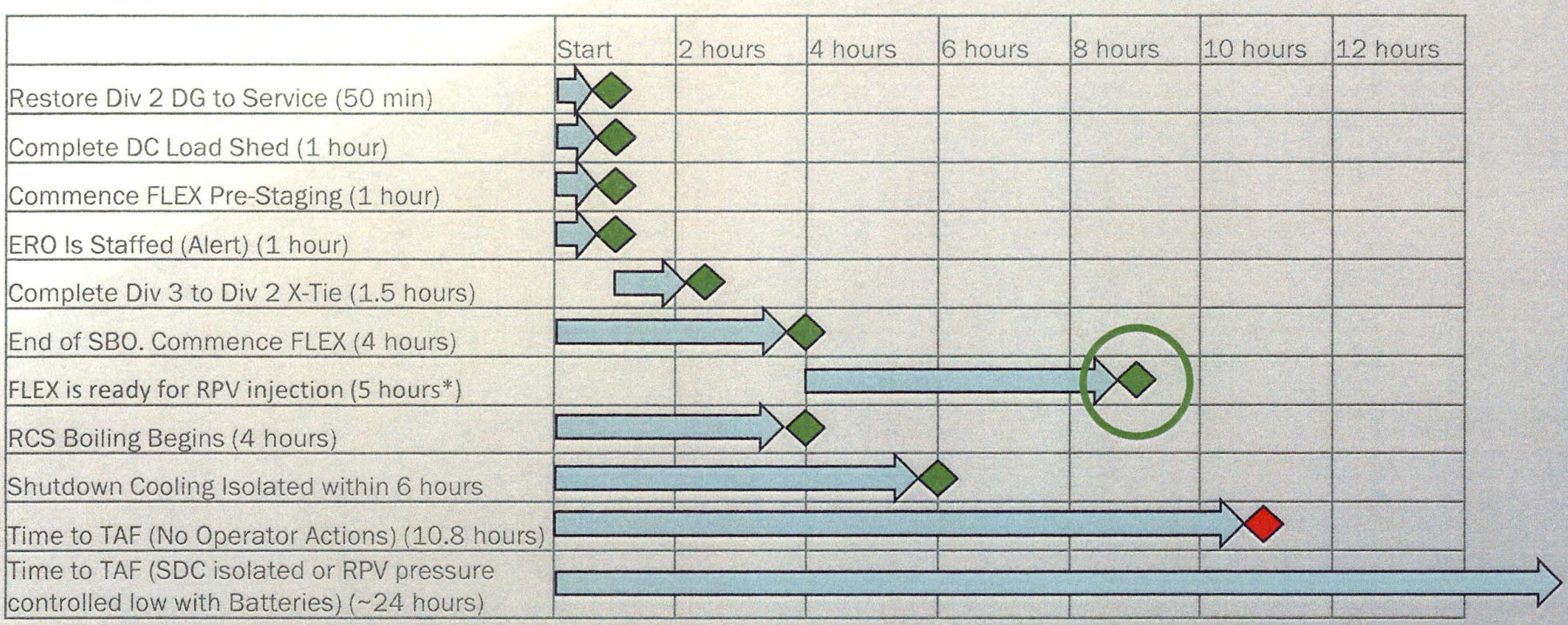
Event Recovery Timeline
Activities in Series



5 hours is the worst case for FLEX RPV injection and 8 hours is the worst case FLEX heat removal and suppression pool makeup. RPV injection commences before TAF in all cases.
*1 hour subtracted from FLEX times because they overlap with the first hour of SBO actions.

Substantial time available for mitigation actions even if performed in series

Exelon Generation

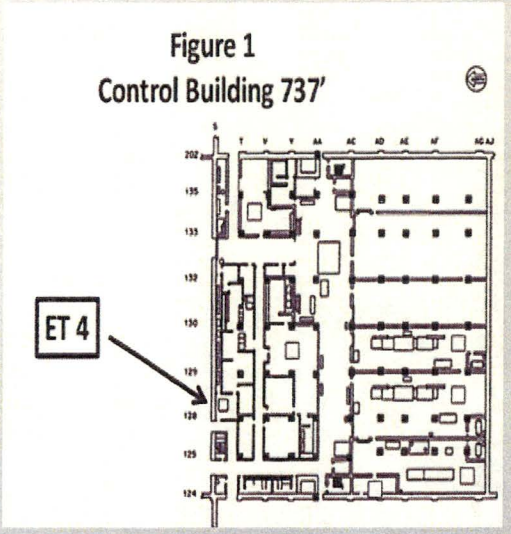
Recovery Pathway #2:
Cross-Tie Div 3 DG to Div 2 Bus

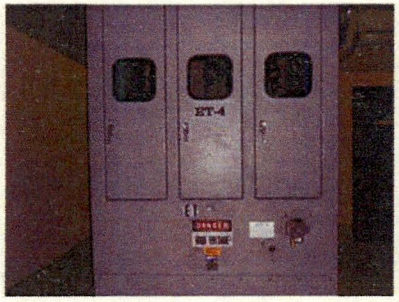
- Bus cross-tie completion validated to complete in 1.5 hours
  - Open one in-plant disconnect
  - Open four relay test switches
  - Remove one relay control power fuse
  - Control Room performs breaker alignments
  - Tools pre-staged in operations locked cages and all manipulations in general plant areas
  - Switchgear breaker and disconnect training occurs every two years
  - Four page procedure with pictures, locations, and diagrams simplify execution

1.2.1 Lock open 1APET4, ET4 Disconnect Switch, CB 737' S.5-129 outside laundry area. (Key #38 – WEC Office) (Figure 1)

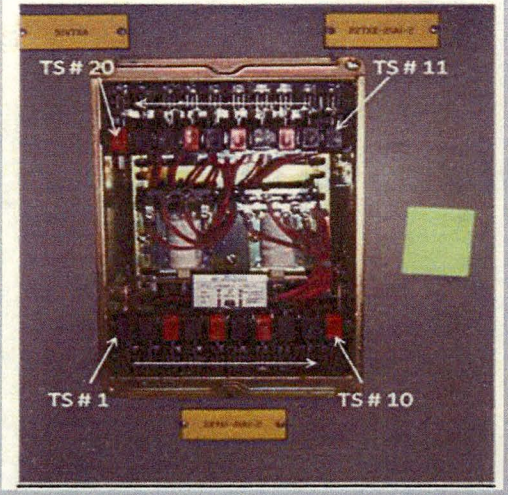
At 1AP09EH, 4160V Bus 1B1 DG1B Feed 1DG01KB, remove cover and open the following test switch:

1) Test switch 4 (fourth from left, bottom) on relay 227X2-21B1-2 (Figure 4)





Operating handles for ET4 or ET14. Handles are stored in the electrical equipment locker located in OPS cage on 762' DG (H1 or GMaster Key required for cage access).



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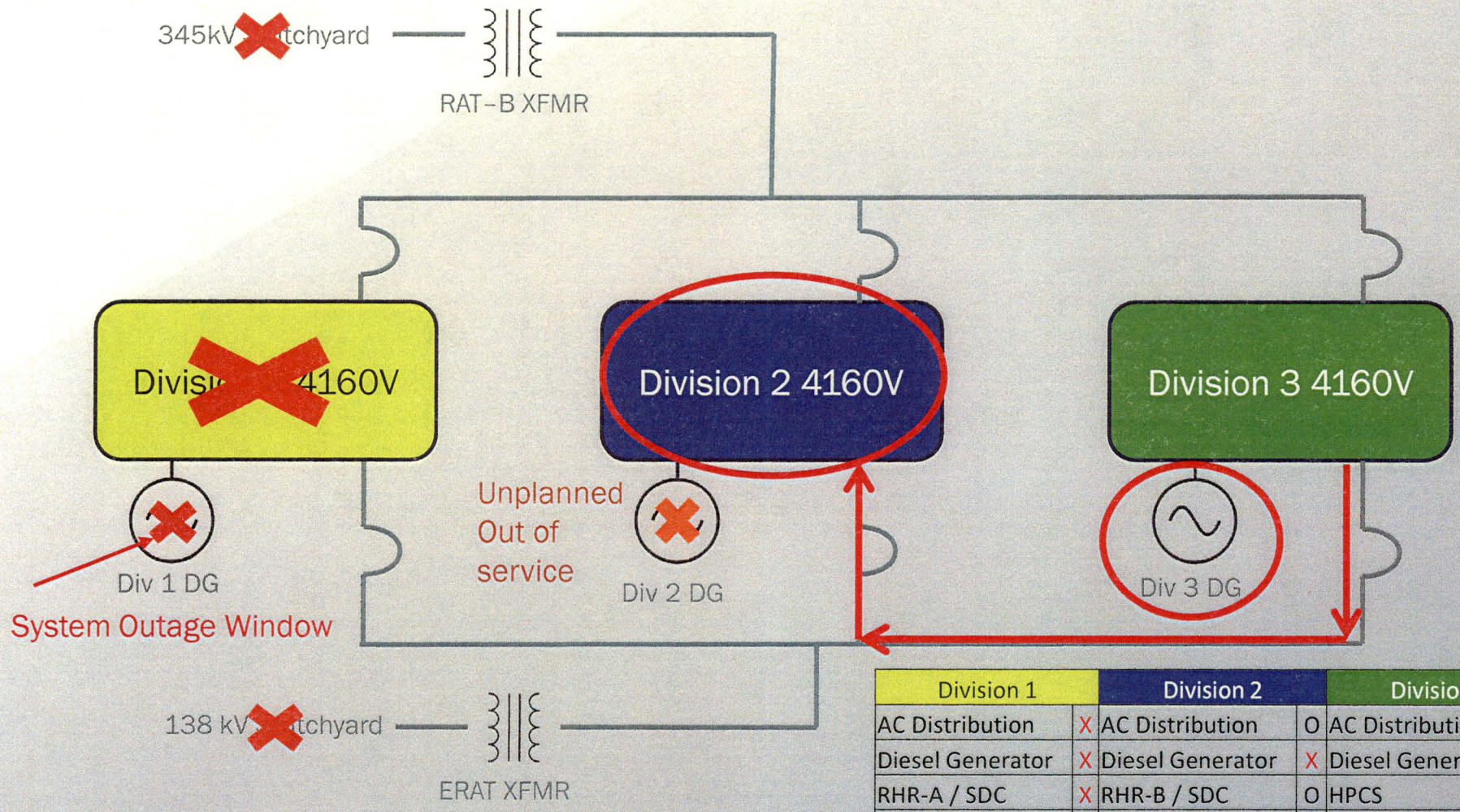
Cross-Tie Div 3 DG to Div 2 Bus During SBO



Division 1		Division 2		Division 3	
AC Distribution	X	AC Distribution	O	AC Distribution	O
Diesel Generator	X	Diesel Generator	X	Diesel Generator	O
RHR-A / SDC	X	RHR-B / SDC	O	HPCS	X
LPCS	X	RHR-C	O		
DC Batteries	O	DC Batteries	O	DC Batteries	O

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Impact of Actual Response: Div 3 to Div 2 Cross-Tie

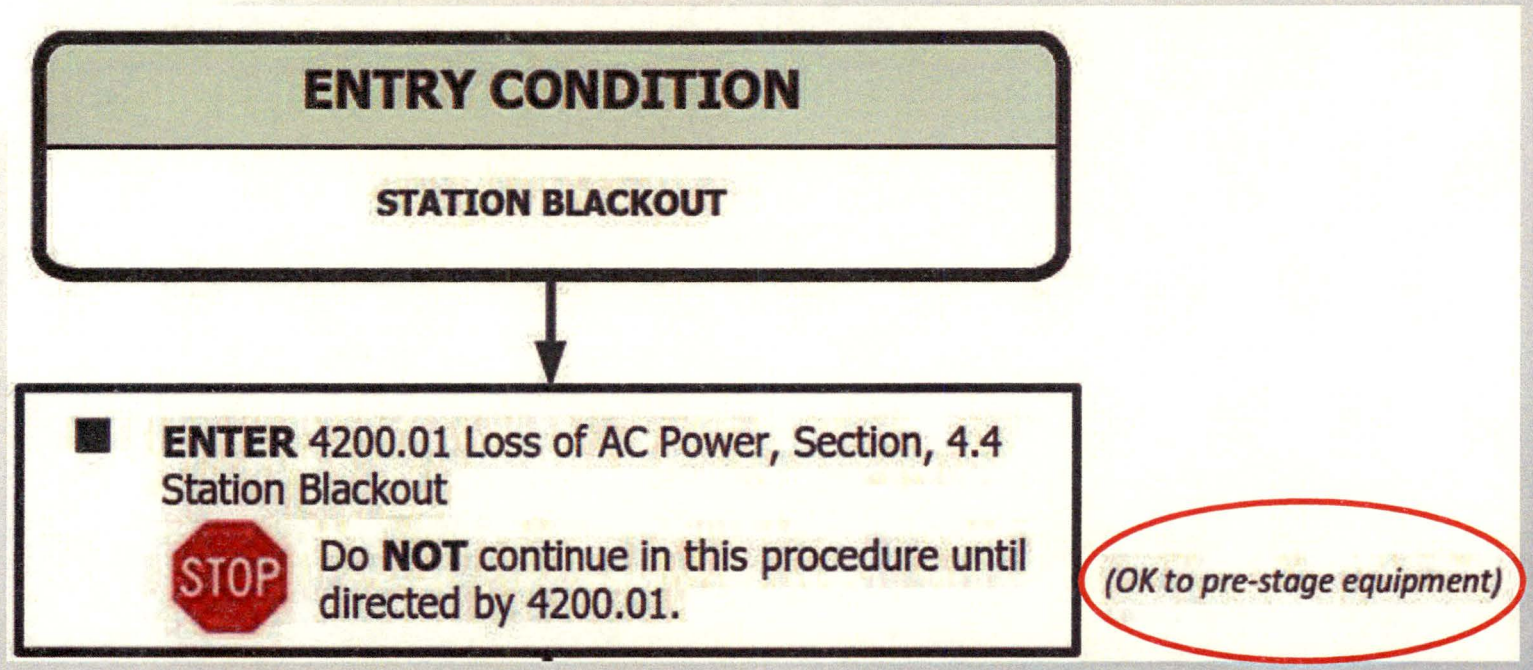
Exelon's Cross-Tie HEP	NRC's Cross-Tie HEP
0.096 (90.4% success)	0.27 (73% success)

PSF	NRC Action Setting	Exelon Position	SPAR-H HEP Reduction Factor	Impact on Finding
Available Time (required time ~1.5 hr)	Nominal (13 hours)	Extra (24 hours)	~7	GREEN
Experience/Training	Low	Nominal		
Ergonomics	Poor	Nominal		
Complexity	High	Moderate		

Realistic modeling of Division 3 cross-tie, coupled with higher likelihood of offsite power recovery within 24 hours, leads to Green

Recovery Pathway #3:
FLEX Implementation and Timeline

Extended Loss of AC Power / Loss of Ultimate Heat Sink



FLEX equipment pre-staged in parallel until implementation required

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FLEX Implementation and Timeline

- By 2 hours: Briefs complete, teams ready to dispatch
- By 4 hours: Pre-staging complete, hoses and cables run to location, FLEX generator running in standby; plant realignment occurs when directed by Control Room Supervisor
- By 6 hours: Battery charger in service powering Division 2 batteries, low pressure RPV makeup is available
- By 8 hours: Decay heat removal and suppression pool makeup available
- Minimum Personnel: 6 Operators, 6 Security Force Members (for 3 hours), 2 Radiation Protection Technicians, 1 Chemistry Technician
- Outage Personnel: At least 15 Qualified Operators + Supervision, Electrical and Mechanical maintenance dispatched by the ERO to support as necessary

FLEX Training and Experience

- Task specific procedures are located in field FLEX cabinets
- Procedures are designed to be "Grab and go" and have prerequisite steps built into each section to ensure all required manipulations are completed
- Most tasks are similar to normal EO tasks
  - Racking breakers
  - Starting FLEX generator (similar to TSC generator)
  - Routing cable or hoses
- Trained in accordance with the Systematic Approach to Training
- From NRC Inspection Report TI-191: "licensee has trained their staff to assure personnel proficiency in the mitigation of beyond DB events"

EOs trained and proficient with FLEX equipment and procedures

Impacts of Actual Response: FLEX Alignment

Exelon's FLEX HEP	NRC's FLEX HEP
0.002 (99.8% success)	0.25 (75% success)

PSF	NRC Action Setting	Exelon Position	SPAR-H HEP Reduction Factor	Impact on Finding
Available Time (required time ~4 hr)	Nominal (13 hours)	Extra (24 hours)	~12	GREEN
Experience/Training	Low	Nominal		
Ergonomics	Poor	Nominal		
Complexity	High	Nominal		

Realistic modeling of FLEX deployment, coupled with higher likelihood of offsite power recovery within 24 hours, leads to Green

RPV Pressure Control

- SRVs are available for pressure control for > 24 hours
  - Division 1 and 2 DC batteries analyzed with > 24 hours capacity with outage loads
  - ADS accumulators and backup air bottles fully charged
- Procedure guidance to stabilize pressure in multiple procedures
  - Station Blackout, Loss of Shutdown Cooling, EOP-1, FLEX
- EOP-1 directs holding RPV pressure < 104 psig until shutdown cooling restored
- Time to boil is 4 hours, SRV usage not needed until at least 8 hours

RPV pressure controlled to allow use of low pressure injection systems

Injection

- Multiple diverse injection systems available after Division 2 AC power restored using proceduralized actions
  - Within 1 minute, start Standby Liquid Control pump "B" from Control Room
    - 43 gpm (4000 gallon tank), injects at any pressure, no field actions required
  - Within 1 minute, start RHR-B/C water leg pump from Control Room
    - 50 gpm with RPV depressurized, no field actions required
  - Manually start RHR-C for Low Pressure Coolant Injection (LPCI)
  - Align RHR-B from shutdown cooling to LPCI mode
- Additional injection systems using proceduralized actions
  - FLEX pump direct injection from Ultimate Heat Sink
  - Suppression Pool Transfer Pump using FLEX generator power
  - Fire pump injection (direct to RPV or using hoses)

Any one path restores RPV level

Impact of Actual Response – Pressure/Inventory Control

Exelon HEP	NRC HEP
SDC Isolation	
0.022 (98% success)	Not modeled

Maintain RPV Pressure (Using Division 1 or 2 Batteries)	
0.001 (99.9% success)	Not modeled

- Both actions procedurally directed
- Success of EITHER action extends time to TAF to about 24 hours
  - Increases Available Time for Diagnosis and Action to restore onsite equipment
  - Increases likelihood of offsite power recovery
- Division 1 and 2 batteries available for RPV pressure control (SRVs) for 24 hours
- RPV pressure control enhances ability for low or high pressure injection sources

Realistic modeling of loss of shutdown cooling actions and RPV pressure control, coupled with multiple sources of injection, leads to Green

Recovery and Mitigation Actions
Summary

- Identification of out of position air start valves will occur
- DG recovery is simple task (open air start valves)
- Shift Manager has High Assurance of Division 2 power recovery
- Activities to restore power taken in parallel but controlled to minimize conflicts
- Other defense-in-depth actions provide additional success paths within the available time

AC power and injection recovered quickly and successfully

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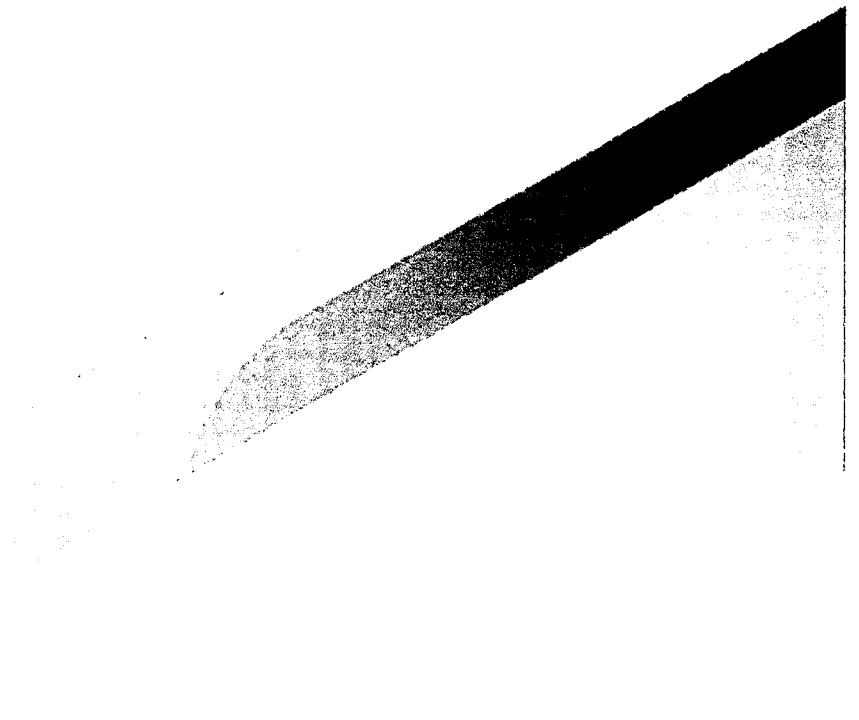
Risk Significance

Gene Kelly

Sr. Manager, Risk Management



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Risk Assessment for Safety Significance

For White significance, NRC must conclude the SBO condition would not be successfully mitigated because:

- Division 2 DG not recovered within 1 hour

  and

- ELAP declared at 1 hour

  and

- Shutdown cooling valve not isolated

  and

- RPV pressure not controlled

  and

- Division 3 to Division 2 AC power cross-tie procedurally complex

  and

- FLEX strategy inadequate and not sufficiently trained

White significance not based on realistic or best available information

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Conclusion

Ted Stoner

Site Vice President

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Conclusion

- We had the knowledge, time, and resources to restore AC power
- NRC policy and guidance dictate risk evaluations to be realistic and based on the best available information
- Best available information includes:
  - Reflecting a realistic response to the event
  - Recognizing extensive operator training and experience
  - Appropriately crediting FLEX
- Using the best available information as presented today and applying the Commission's guiding policies and principles on risk results in:

Green significance